



CAA Compliance Inspection Report

Partial Compliance Evaluation **Clearwater Paper Corporation**

Lewiston, Idaho

Inspection Dates: December 3-5, 2013


Report Author Signature


Date

Zach Hedgpeth, PE
CAA Inspector
EPA Region 10

Table of Contents

1. Basic Facility and Inspection Information.....	4
2. Introduction	5
3. Process Description	5
4. Pre-Fieldwork Discussions.....	7
5. Inspection Activities – Tuesday, December 3, 2013 – 07:30 to 17:20.....	8
5.1. Arrival and Opening Conference	8
5.2. Initial Field Walk-Through of M&D Digester Building	10
5.3. Records Review – Pulp Washer Doors, LVHC/HVLC Systems.....	10
5.4. Discussion of Personal Protective Equipment (PPE), Safety Issues.....	11
5.5. Collection of Wet/Dry Bulb Temperatures.....	12
5.6. Discussion of Wet/Dry Bulb Temperatures.....	13
6. Inspection Activities – Wednesday, December 4, 2013 – 09:15 to 14:30.....	13
6.1. Discussion with Stef Johnson, OAQPS	13
6.2. Discussion with Julie Vergeront, Region 10 ORC	14
6.3. Arrival at Facility & Introductory Discussions.....	14
6.4. Method 308 Test Run on Sampling Point 1a	14
6.5. Post Test Run Discussion: Method 308 on Sampling Point 1a	15
6.6. Pulp Washer Door Inspection	15
6.7. NCG Positive Pressure Leak Check	16
6.8. Phone Conversation with Park Law.....	16
6.9. Departure, Offsite Photos, and Evening Discussions	17
7. Inspection Activities – Thursday, December 5, 2013 – 08:10 to 13:20.....	17
7.1. Flow Measurement on Sampling Points 1a, 2a, 1b, and 2b.....	17
7.2. Method 308 Test Run on Sampling Point 3a	18
7.3. Tour of M&D Digester Process Units	19
7.4. Debrief with Horizon & Clearwater Technical Staff.....	19
7.5. Closing Conference.....	20

Attachments

Attachment 1	EPA Region 10 Photolog
Attachment 2	Facility Location Maps
Attachment 3	Clearwater Paper Title V Permit - Consumer Products Division
Attachment 4	Clearwater Paper Title V SOB - Consumer Products Division
Attachment 5	Clearwater Paper Title V Permit - Pulp and Paper Division
Attachment 6	Clearwater Paper Title V SOB - Pulp and Paper Division
Attachment 7	Clearwater ICR 2013 Pre-Test Feasibility Study
Attachment 8	March 2013 Pulp Mill Inspection Report
Attachment 9	April 2013 Pulp Mill Inspection Report
Attachment 10	Chip and Sawdust Line Process Flow Diagrams
Attachment 11	HVLC and LVHC Piping and Instrumentation Diagrams
Attachment 12	M&D Digesters Piping and Instrumentation Diagrams
Attachment 13	LVHC Method 21 Leak Check Report – August 2013
Attachment 14	EPA Region 10 PID Calibration Record

1. Basic Facility and Inspection Information

Facility:	Clearwater Paper Corporation Lewiston, ID
Mailing Address:	803 Mill Road / P.O. Box 1126, Lewiston, ID 83501
AFS Number:	1606900001
FRS Number:	110009335905
SIC:	2611 – Pulp Mills 2621 – Paper Mills
NAICS:	322110 – Pulp Mills 322130 – Paperboard Mills
Permit Number:	Title V Air Operating Permit – Idaho DEQ Tier I Permit No. T1-2010.0030 – Pulp & Paper Division No. T1-2010.0029 – Consumer Products Division
Facility Contact:	Rick Wilkinson, Environmental Engineer, 208-799-1684
Agency Inspectors:	Zach Hedgpeth, EPA Region 10
Dates of Inspection:	December 3-5, 2013
Date of Report:	February 25, 2014

Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision on compliance with CAA regulations or applicable permits, nor is it meant to be a comprehensive summary of all activities and processes conducted at the facility.

2. Introduction

Clearwater Paper Corporation (Clearwater) is located just east of Lewiston, Idaho along the south bank of the Clearwater River. Maps showing the location of the facility are included as Attachment 2. The facility is a kraft pulp and paper mill and is a major source of air pollutants. Process emissions from the facility are released from the various emission units described in the facility Title V permit. Idaho Department of Environmental Quality (IDEQ) issues the facility Title V permit in two parts as cited above, separating the Pulp and Paper Division and the Consumer Products Division, although the facility is considered a single facility. The facility Title V permit documents in both parts as well as the associated Statement of Basis documents are included as Attachments 3-6 for informational purposes.

This partial compliance evaluation (PCE) Clean Air Act (CAA) inspection had three purposes:

1. The primary purpose was to observe and participate in a pre-test feasibility evaluation to be conducted by Horizon Engineering, a source testing firm. The pre-test feasibility work was conducted in order to determine the feasibility of applying EPA reference test methods in order to measure airborne pollutant concentrations within eight process lines associated with the two Messing & Durkee (M&D) digesters. This work is discussed in more detail later in this report, along with the preliminary results of the evaluation.
2. Additionally, the inspection was conducted to observe operation of the pulp washers, specifically focusing on the doors and seals to check for leaks.
3. The final purpose was to observe operation of the positive pressure sections of the low volume, high concentration (LVHC) and/or high volume, low concentration (HVLC) gas collection systems at the facility, and potentially check for leaks using a photoionization detector (PID).

This report is focused on the pre-test feasibility evaluation of the M&D digester process lines, with short sections describing the observations related to the pulp washer doors and the positive pressure sections of the gas collection systems.

Within the compliance context, earlier negotiations between EPA and Clearwater Paper resulted in the agreement to conduct the pre-test feasibility evaluation prior to conducting the source testing due to the unique nature of the testing. The scope and purpose of the pre-test feasibility evaluation is described in a document prepared by Horizon Engineering entitled *Clearwater ICR 2013 Pre-Test Feasibility Study* (Attachment 7).

As requested by the Region 10 Air & RCRA Compliance Unit, I was onsite at the Clearwater Paper facility throughout the pre-test feasibility evaluation work conducted by Horizon Engineering which occurred December 3-5, 2013.

3. Process Description

As mentioned above, the emission units that are the focus of this pre-testing feasibility effort are the two M&D digesters. These cylindrical units continually process sawdust, digesting

the raw material to produce pulp. The digesters are shown in photo 7 in the photolog (Attachment 1). Digesters at kraft pulp mills are identified as a source of hazardous air pollutant (HAP) emissions in the federal air toxics rules within 40 CFR 63, subpart S. Emissions from digesters are required to be collected by the low volume, high concentration (LVHC) gas systems at pulp and paper facilities and routed to a control device.

The following is an abbreviated description of the sawdust feed system and process gas venting configuration associated with the M&D digesters at Clearwater Paper's Lewiston mill, as relevant to this pre-test feasibility effort. The discussion below describes a single digester system. All references to photographs pertain to those in Attachment 1. A schematic diagram of the process is included on the third page of *Clearwater ICR 2013 Pre-Test Feasibility Study* (Attachment 7). Photos 5 & 6 show how the digester systems are depicted by the facility computerized system (referred to as the PI system). Piping & Instrumentation Diagrams for the two digester systems are included in Attachment 12.

Sawdust is conveyed pneumatically to a cyclone at the top of the building which houses the M&D digesters (photos 74-75). Sawdust then falls by gravity into the Kone Bin below (photo 76). From the bottom of the Kone Bin, sawdust enters a horizontal screw conveyor (referred to by the facility as the "metering screw"), where sawdust is mixed with cooking liquor and conveyed to the drop chute (see photos 9, 13, & 30). The sawdust travels down the drop chute to the Bauer valve (photos 77-78).

The Bauer valve is a rotating circular valve whose segmented "pockets" accept raw sawdust from the drop chute above and deposit the sawdust into the top of the M&D digester below. The rotation of the theoretically isolated pockets creates a partial seal that helps contain digester gasses in the digester rather than allowing them to escape upward through the drop chute. However, some gasses do escape upward through the Bauer valve and are vented from the drop chute to the Exhaust Chamber.

The Exhaust Chamber is a rectangular metal box positioned above the "downstream" end of the metering screw, adjacent to the bottom of the Kone Bin. The exhaust chamber has connectivity with the metering screw, and acts as a sort of mixing chamber where mill water is added to the metering screw sawdust, and exhaust gasses and steam from the drop chute and Bauer valve are directed and allowed to mix before being vented to the Kone Bin. The Exhaust Chamber on each digester system is equipped with twin vent lines carrying process gasses into the lower portion of the Kone Bin.

For each digester system, the four process points of interest for purposes of this pre-test feasibility effort are the two lines carrying process gasses and steam into the Exhaust Chamber (from the drop chute and Bauer valve), and the two lines carrying process gasses and steam out of the Exhaust Chamber and into the Kone Bin. Throughout this report, the following nomenclature has been used to refer to the eight points in the process where sampling ports have been installed. This nomenclature originates in the Horizon Engineering document *Clearwater ICR 2013 Pre-Test Feasibility Study* (Attachment 7).

Sampling Port ID	Digester	Process Line Description
1a	1	Exhaust Chamber to Kone Bin (on right ¹)
2a	1	Exhaust Chamber to Kone Bin (on left)
3a	1	Bauer Valve Secondary Exhaust to Exhaust Chamber
4a	1	Drop Chute to Exhaust Chamber
1b	2	Exhaust Chamber to Kone Bin (on right)
2b	2	Exhaust Chamber to Kone Bin (on left)
3b	2	Bauer Valve Secondary Exhaust to Exhaust Chamber
4b	2	Drop Chute to Exhaust Chamber

4. Pre-Fieldwork Discussions

In preparation for the testing feasibility fieldwork, discussions occurred between EPA, Clearwater Paper, and Horizon Engineering staff regarding the following topics. The outcome of each of these discussions is included below, or in the discussion of field activities later in this report.

1. *Similarity of the two M&D digester systems.* Questions regarding the similarity of the two digester systems were raised when Horizon Engineering proposed to evaluate the feasibility of testing the process lines in question on a single digester system. Horizon's proposed approach assumed the corresponding line on the other digester system would be similar enough that the determination regarding the feasibility of testing would apply to both process lines. Prior to fieldwork beginning, EPA clarified that the proposal to limit feasibility work to a single digester system would be contingent upon examination of the two systems in the field by EPA's field engineer (myself), in coordination with Clearwater Paper and Horizon Engineering technical staff, specifically examining the following:
 - a. Do the two systems have the same components and configuration?
 - b. Are the two systems identical or mirror images of each other?
 - c. Do the two systems have the same connecting pipes with same diameters?
 - d. Are the two systems the same age? Has any significant work been done to one system but not the other?
 - e. Are monitored process parameters similar between the two systems?
2. *Mitigation ideas to address expected sample port clogging.* Sampling ports had been installed on the eight process lines in question during the most recent facility shutdown. Following installation of the sampling ports, Clearwater Paper staff had periodically evaluated the ports and noticed significant clogging due to solid and liquid materials in the process lines. In preparation for the pre-test feasibility work, the following ideas were discussed as potential mitigation actions to address the clogging issue and facilitate sampling. These ideas are presented in a question and answer format.

¹ "Right" and "Left" designation here refer to the equipment as viewed in the photographs included in the photolog. The main catwalk from which the Exhaust Chambers and Kone Bins for the two digesters are visible only allows clear observation of the equipment from one direction.

- a. *Question:* Are there any vertical sections of the process lines? Could new sampling ports be installed in the vertical sections to help mitigate collection of liquids and solids in and around the sampling ports? *Answer:* New sampling ports could only be installed during a shutdown of the digesters. Ports 3 and 4 on each digester are installed on a vertical curving section of pipe, while ports 1 and 2 are installed in a horizontal section of pipe. Regarding ports 1 and 2, the process lines between the Exhaust Chamber and the Kone Bin are generally horizontal throughout their length.
- b. *Question:* Could representative samples be collected from the Exhaust Chamber? *Answer:* Possibly, but installation of sampling ports can only occur during plant shutdown and so are not feasible for this testing effort.
- c. *Question:* Could a 90° sampling probe or curved piece of Teflon tubing be inserted into the sampling port with the open end facing downstream to attempt collection of sample gas while minimizing collection of solids and liquid droplets? *Answer:* This technique may be an option during the feasibility work.
- d. *Question:* Could a filter or knockout chamber be used to separate solids or liquids from the sample gas? *Answer:* This technique may be an option during the feasibility work, such as using large impingers.
- e. *Question:* Could the sampling rate be reduced in order to achieve a longer sampling run while minimizing collection of solids and liquids? *Answer:* This technique may be an option during the feasibility work.
- f. *Question:* Has any trend been observed regarding the severity of clogging between the four different sampling points on each digester system? *Answer:* Perspective on this question may be evident based on the pre-test feasibility work.

5. Inspection Activities – Tuesday, December 3, 2013 – 07:30 to 17:20

5.1. Arrival and Opening Conference

On the morning of Tuesday, December 3, 2013, I arrived at the Clearwater Paper facility in Lewiston and presented my inspector credentials to facility security staff. The weather was cloudy with temperatures in the low 30's with light snow. At my request, security staff contacted Rick Wilkinson in the Clearwater Paper Environmental Department, who met me at the gate and escorted me to the facility administrative building. After viewing a short facility safety video and signing in, we proceeded to the environmental offices.

We arrived at the environmental department offices at approximately 08:00, where Mr. Wilkinson introduced me to Bob Pernsteiner, a retiree from the facility who is on retainer, and Clayton Steele, the Environmental Manager. The four of us proceeded to hold the opening conference.

The following were present during all or a portion of the opening conference as described below:

- Clayton Steele, Environmental Manager, Clearwater Paper

- Rick Wilkinson, Environmental Engineer, Clearwater Paper
- Bob Pernsteiner, Retiree, Clearwater Paper
- Joe Heffernan, Team Leader, Horizon Engineering
- Jason Sweeney, Field Technician, Horizon Engineering
- Kyle Kline, Field Technician, Horizon Engineering
- Tom Lyons, Field Technician, Horizon Engineering
- Zach Hedgpeth, Inspector, EPA Region 10

I began the conference by explaining my status as a federal compliance inspector, and that I was onsite to conduct an EPA compliance inspection with respect to the Federal Clean Air Act (CAA) and implementing regulations. I explained that EPA considers test observation work to constitute an inspection and that although the inspection was expected to focus on the pre-test feasibility work associated with the M&D digesters, there were two additional areas at the facility I would be inspecting while onsite. I then discussed the three areas of focus from EPA's perspective, these being examination of the pulp washer doors and the gas collection system positive pressure sections in addition to the M&D digester testing work. I explained that for air quality purposes, this was to be a Partial Compliance Evaluation (PCE). At this time I presented my inspector credentials to Clearwater Paper personnel.

Following the introductory remarks, I provided the following initial records request list to Clearwater personnel verbally:

1. Pulp Mill Inspection reports, including 1PR and 2PR pulp washer inspection and maintenance records (Attachments 8 and 9).
2. P&I diagrams for the low volume, high concentration (LVHC) and high volume, low concentration (HVLC) gas collection systems (Attachment 11).
3. Piping & Instrumentation (P&I) diagrams for both M&D digester systems (Attachment 12).
4. Most recent EPA Method 21 leak detection test report (Attachment 13).

Bob Pernsteiner then led a discussion focused on safety and logistical concerns related to the pre-test feasibility work. At approximately this point in the discussion, the staff from Horizon Engineering joined the conference.

During the opening conference, I notified Clearwater staff of my intent to take photographs during the inspection. With this in mind, I asked whether Clearwater had confidentiality concerns. Clearwater staff indicated that photographs of process equipment would not be significantly restricted, but that Clearwater would request the opportunity to take duplicate photos or to obtain electronic copies of the photos I take at the completion of the inspection. At the time of this discussion, and in the interest of amicability, I agreed to notify Rick Wilkinson before taking a photo to enable him to take a duplicate with his own camera. This approach proved logistically difficult, and following a subsequent discussion with Julie Vergeront (Region 10 Office of Regional Counsel), I agreed to provide the facility with electronic copies of all photographs taken during the inspection. I did clarify that this was a voluntary gesture taken in the interest of maintaining an amicable relationship during the inspection and was by no means an obligation for EPA.

Finally, the opening conference included discussion regarding the similarity between the two digester systems, as discussed above, in order to determine whether feasibility testing conducted on a certain process point within one system would reasonably provide an indication regarding the feasibility of testing the corresponding process point on the other digester system. During this discussion, Mr. Pernsteiner clarified that the two systems are virtually identical and were both installed during the 1970's. Neither system has been substantially modified in any way that created a significant difference with the other system. At this time, the technical staff in attendance from the facility, EPA, and Horizon Engineering tentatively agreed that evaluation of process points on a single digester system was likely to be sufficient for purposes of the feasibility evaluation, pending an initial field walk-through of the equipment, examination of appropriate P&I diagrams, and observation of real time monitoring data on the two systems via the facility PI computerized monitoring system.

5.2. Initial Field Walk-Through of M&D Digester Building

Following the opening conference, all attending personnel with the exception of Mr. Steele proceeded to an initial field walk-through of the M&D digester building. Throughout the pre-test feasibility work, the four Horizon Engineering technicians, in addition to Rick Wilkinson and Bob Pernsteiner from Clearwater Paper were present during fieldwork. The field walk-through began at approximately 09:00 and ended at approximately 10:30.

The field walk-through consisted of a visit to the M&D digester control room to check-in with the operators. At this time, I took photos of the process screens for both digester systems. These are included as photos 5 & 6 in Attachment 1, and document the instantaneous values of the various operating parameters which are permanently monitored on each system.

We then proceeded to an upper floor of the building from which the Exhaust Chamber and Kone Bin for each digester system are accessible. Personnel conducted an initial observation of the sampling ports installed on each system. Horizon Engineering staff began working on the initial setup of their equipment. While this preparatory work began, I returned to the facility environment offices with Mr. Wilkinson and Mr. Pernsteiner to examine facility records.

5.3. Records Review – Pulp Washer Doors, LVHC/HVLC Systems

The records review began with an examination of the pulp washer door monthly inspection records. Review of the monthly records indicated that the forms had been changed between March and April 2013 to include the phrase “confirm washer doors are closed and sealed”. I obtained copies of both the March and April 2013 reports in order to indicate this change (Attachments 8 and 9). The April through October 2013 reports were reviewed; no leaks were observed during this time according to the reports.

I next obtained copies of the P&I diagrams for the LVHC and HVLC gas collection systems (Attachment 11). Based on review of these diagrams, I noted the following questions and

observations. Some of the questions were addressed in a phone conversation I held on the afternoon of the following day (12/4/14) with Park Law, another retiree from the facility who is on retainer for part time work. Mr. Law's expertise at the facility is in regard to the gas collection systems, kilns, and incinerator. I have included the information provided by Mr. Law here, while the phone interview is documented later in this report in the chronological order in which it occurred.

LVHC/HVLC Observations and Questions

1. The primary control device for the NCG or non-condensable gas system (aka LVHC) is a natural gas fired incinerator (see photos 50-52). Number 3 and 4 lime kilns are the backup control devices.
2. Negative pressure in the NCG system is created by two steam ejectors located within the incinerator complex. As is typical for these systems, the vast majority of the system (the collection side) is under negative pressure by design, with only a short section of piping under positive pressure between the steam ejectors and the incinerator.
3. The P&I diagrams indicate that the negative pressure, collection sides of the NCG and HVLC systems are equipped with pressure monitors (indicated by instruments labeled "PI" for "pressure indicator"), although the specific type of instrument (water tube manometer, electronic pressure sensor) is unclear. The negative pressure, collection side of the NCG system was not examined during the inspection.
4. With regard to venting of the LVHC system, I asked whether venting was computer-controlled, how venting events are activated/triggered, when the last event occurred, and how many vents existed on the system. During my conversation with Park Law the following day, I learned that the single vent to atmosphere is equipped with a computer controlled valve that releases at a set pressure (which I did not obtain during the inspection). The facility has had releases in the past, all of which have been reported to Idaho DEQ, according to the facility. About two years ago, the facility installed new control logic such that in the event of an incinerator malfunction, the system automatically redirects the LVHC gasses to the lime kilns and purges the line (sending the gas to the kilns) so that no vent to atmosphere is necessary. Since installation of this new control logic, there have been no vent-to-atmosphere incidents.

5.4. Discussion of Personal Protective Equipment (PPE), Safety Issues

At approximately 11:40, Joe Heffernan of Horizon Engineering joined us in the conference room. Mr. Heffernan informed us that sampling work would be delayed due to the delayed shipment of a supplied air apparatus that Horizon was planning to use during the sampling. Shipment of the device had been delayed due to severe weather.

Several options were discussed to address exposure concerns of the Horizon personnel and allow sampling feasibility work to proceed. These options included the use of hydrogen sulfide monitors, handheld monitors to measure pollutant concentrations, rental of a comparable supplied air apparatus from a local supplier, and potential services that may be available from the facility fire department. It was not known whether significant exposure

would occur when the sampling ports were opened, but all involved agreed that caution was the best approach in the interest of safety.

After discussion of these options, it was decided to open and clean out the sampling ports using Clearwater Paper personnel who would be equipped with a full-face air purifying respirator. After the sampling ports were cleaned, Horizon Engineering technicians would attempt to collect wet and dry bulb temperatures.

5.5. Collection of Wet/Dry Bulb Temperatures

At approximately 13:20, personnel returned to the field in order to attempt collection of wet and dry bulb temperatures. As mentioned above, the initial step was to “rod out” the sampling ports using a steel rod. This was performed by an operator provided by Clearwater Paper, who was equipped with a full face air purifying respirator. Other personnel present, including myself, observed from the adjacent floor, approximately 15-20 feet away. Cleanout of the pressure tap downstream of the orifice plate associated with sampling point 3a is depicted in photo 10.

The Clearwater Paper operator cleaned out each sampling port and pressure tap. We observed that all of the “lower” ports were clogged. By “lower” ports, I am referring to sampling ports 3a, 4a, 3b, and 4b, along with the associated pressure taps on either side of the orifice plates. The fact that these ports were clogged was evident because when the operator opened the valves on these ports, no process gasses were observed to vent out of the sampling port until after the port was cleaned out with the steel rod. The “upper” ports (1a, 2a, 1b, and 2b) were not clogged; process gasses were observed to vent out of these ports as soon as the operator opened the valve. On the upper lines (between the Exhaust Chamber and the Kone Bin), all four of the 2-inch ports positioned on the bottom of the pipe were initially clogged, and visible solids and liquids were observed to fall out of these larger diameter ports when the operator cleaned them out with the steel rod. The 2-inch ports that were positioned 90° around the pipe circumference (on the side of the pipe) were not clogged.

Once the sampling ports were cleaned out and process gas venting could be controlled using the valve installed on each vent, Horizon Engineering technicians began collecting wet and dry bulb temperatures, starting with sampling point 3a. Collection of temperatures is depicted in photos 11-12 and 14-17. Wet and dry bulb temperature data is given in photo 18. The Horizon technicians were able to collect temperatures at all eight sampling ports. Wet and dry bulb temperatures were consistently the same or very close on all eight sampling ports, indicating that the gas streams are at or close to the steam saturation point.

Following collection of wet and dry bulb temperatures, the group moved to the conference room for discussion.

5.6. Discussion of Wet/Dry Bulb Temperatures

The same personnel attended discussion of the wet & dry bulb temperature measurements and resulting data as attended the opening conference. The discussion began at 15:15.

Joe Heffernan began the discussion by informing the group that the temperature data collected (see photo 18) indicate that the process gasses being tested are approximately 85-100% moisture content.

Two options for pursuing sampling under these conditions were discussed. The first option discussed was the use of nitrogen gas to dilute the sample gas down to manageable moisture content. Dilution at a 4:1 ratio was discussed. Horizon Engineering staff stated they did not have the equipment necessary (onsite) to conduct dilution sampling. The use of nitrogen backflush was also discussed as a potential option to address plugging. Specifically, if plugging occurred during a test run, the run could be paused while the sampling port was backflushed using nitrogen gas using appropriate valving. After the port was cleared, testing could resume.

The second option discussed was to reduce the sampling rate such that approximately 60 liters of dry gas would be collected over a 2-hour test run. Based on preliminary calculations conducted by Horizon Engineering, this approach could be expected to produce about 1.5 liters of water based on the moisture contents resulting from the wet/dry bulb temperatures. The Method 308 sampling train (methanol) could be modified to use full size impingers to allow collection of this large quantity of liquid.

The outcome of the discussion was an agreement to attempt the second option on the following day. In addition, Horizon will attempt to collect Method 2 flow rate measurements from the 2-inch diameter ports on sampling points 1a, 1b, 2a, and 2b.

During the discussion, Clearwater personnel raised the question of why sampling points 3 and 4 were being tested. Additionally, Clayton Steele asked me why Clearwater could not simply measure methanol emissions from the top of the cyclones. In response, I referred him to the assigned compliance officer, Roylene Cunningham. I also explained that my purpose onsite was to ensure the testing feasibility work proceeded in a technically sound manner such that EPA could have confidence in the results. I was not onsite to provide explanations regarding the underlying reasoning for the testing.

The discussion ended at 17:20, at which time I departed the facility for the day.

6. Inspection Activities – Wednesday, December 4, 2013 – 09:15 to 14:30

6.1. Discussion with Stef Johnson, OAQPS

At approximately 07:00 prior to arriving at the facility, I called Stef Johnson to give him an update on the sampling effort and discuss the planned activities for the day. Our discussion focused on the planned approach to attempt Method 308 sampling with modifications to

address the high moisture content. Mr. Johnson offered the following feedback related to this topic:

- He agreed that the use of large impingers was reasonable and probably the best approach under the circumstances.
- Use of the dilution approach may work, but would have the disadvantage of proportionally increasing the method detection limit. For example, if a 4:1 dilution ratio was used, the detection limit for methanol would be a factor of four higher, resulting in less sensitivity to low level emissions.
- He recommended that I confirm that Horizon personnel are checking for supersaturation in order to understand whether they are collecting water droplets. Water droplets may contain dissolved methanol.

6.2. Discussion with Julie Vergeront, Region 10 ORC

Just before traveling to the facility, I spoke briefly with Julie Vergeront with regard to the facility request that EPA provide electronic copies of photographs taken during the inspection. Ms. Vergeront agreed that EPA had no obligation to provide electronic copies, and that it was contrary to our normal procedures, but that she would defer to my judgment given the circumstances. I communicated my intention to agree to provide electronic copies in order to maintain an amicable relationship during the inspection and to allow greater freedom on taking photographs without the need to first notify Mr. Wilkinson.

6.3. Arrival at Facility & Introductory Discussions

I arrived at the facility at approximately 09:15 and met Mr. Wilkinson at the security gate. The weather was clear with temperatures in the 20's. Mr. Wilkinson escorted me to the administration building to check-in and then we proceeded to the offices of the Environmental Department.

At this time, I held a short discussion regarding photographs with Mr. Wilkinson and Mr. Steele. I explained that EPA would agree to provide electronic copies of photographs taken during the inspection to Clearwater Paper, but that this did not reflect normal EPA inspection procedures and was being done simply as a courtesy. We also discussed the logistics of conducting the pulp washer door and gas collection system inspections, as time allows during the testing feasibility work. Arrangements were also made to hold a closing conference for the inspection on Thursday afternoon.

6.4. Method 308 Test Run on Sampling Point 1a

I then proceeded to the M&D digester building, escorted by Mr. Wilkinson, and arrived at approximately 09:50. Upon arrival, Mr. Heffernan informed me that the first attempt at sampling using Method 308 for methanol was underway on sampling point 1a. I observed the majority of this test run, which proceeded successfully although significant liquid was collected in the full size impingers. Testers had to pay special attention to the pump setting, which required adjustment in order to maintain the sampling rate. In general, the modified Method 308 with large impingers and reduced sampling rate appeared to be successful.

During the test run, Mr. Heffernan also informed me that the supplied air apparatus that Horizon had ordered would not arrive in time to be used during this test feasibility work due to a weather-related delay in transit. Although testing personnel were able to conduct the Method 308 testing without additional breathing protections since the sampling point could be effectively closed once the sampling line was installed, they would not be able to open the 2-inch ports in order to conduct flow rate sampling without full face respirators.

6.5. Post Test Run Discussion: Method 308 on Sampling Point 1a

Following the completion of Run #1 of Method 308 on sampling point 1a, all personnel again met in the conference room for discussion, including Mr. Steele.

Mr. Heffernan informed the group that the testing approach appears to have worked and would be expected to be feasible for sampling points 1a, 1b, 2a, and 2b. It was agreed that further feasibility testing work to establish a sampling approach for these sampling points would not be necessary. During this discussion, I mentioned the idea of checking for super saturation. Mr. Heffernan said he thought this would be a good idea for the actual testing. The goal for this exercise was to determine if a sample could be drawn using the modified Method 308 approach. The answer is yes.

In order for Horizon personnel to open the 2-inch ports and collect flow rate data from sampling points 1a, 1b, 2a, and 2b, efforts are underway to arrange fit testing locally to allow use of full-face respirators owned by Clearwater Paper. Horizon testers intend to travel to Norco in Lewiston for fit testing today, with the goal of attempting flow rate measurements later this afternoon.

While Horizon personnel traveled to Norco for fit testing, I arranged to conduct an inspection of the pulp washers and the positive pressure section of the NCG gas system. In preparation for inspection of the NCG system, I retrieved the EPA Region 10 PhoCheck Tiger Photoionization Detector (PID) from the car.

6.6. Pulp Washer Door Inspection

After picking up Mr. Park Law at another office within the plant, we arrived at the pulp washer building at approximately 13:00. The primary purpose of this portion of the inspection was to check the installation of new washer doors on pulp washers designated “1PR” and “2PR” by the facility. The new doors on both pulp washers were observed to fit tightly with no observed leaks. The doors were white in color, constructed of fiberglass, and equipped with a heavy rubber seal around the edge as well as levered locking attachments spaced along the top edge. The new doors are shown in photos 43-46 in Attachment 1.

While in the pulp washer room, I noticed three smaller washers located adjacent to 1PR and 2PR washers. I observed significant “steam” puffing from the middle of these three washers, as identified in photo 48 as 2PO washer. I also collected a short video of the puffing washer,

which is included in the Region 10 facility inspection file on compact disk. The video is named P1000049.MOV².

I asked Mr. Law about the observed emissions from 2PO washer while in the field. He informed me that emissions from 2PO and 3PO washers are not collected by the HVLC gas system, while emissions from 1PR, 2PR, and 3PR washers are collected. Emissions from 2PO and 3PO washers are vented to atmosphere. At the time of the inspection, a fan bearing on 2PO washer was out which caused the observed puffing. This issue was discussed during the closing conference of the inspection, as described later in this report.

We departed the pulp washer building at approximately 13:24, and proceeded immediately to examine the positive pressure section of the NCG gas system.

6.7. NCG Positive Pressure Leak Check

The group arrived at the NCG incinerator complex at approximately 13:30. The NCG incinerator is shown in photos 50-52 in Attachment 1. As mentioned earlier, negative pressure in the NCG (LVHC) collection system is created by a pair of steam ejectors, which are located within the incinerator complex.

During my inspection, I observed that insulation covers both steam ejectors as well as the majority of the positive pressure piping. The insulation significantly inhibits leak detection activities since there is no access to most pipe joints, valves, and other fixtures. I was able to identify two positive pressure flange joints which were exposed and therefore candidates for leak check, and proceeded to leak check the flange at the outlet of the white liquor scrubber at 13:40. No leaks were identified, and readings were approximately background (less than 1 ppm). The second potential flange was just upstream of the mist eliminator, but was measured to be 190° F which is too hot for the PID³. These two flange locations are marked in the NCG P&I diagram (Attachment 11).

Thorough visual observation of the positive pressure section between the steam ejectors and the incinerator injection nozzles identified no visible leaks. (b) (5)

[REDACTED]

[REDACTED]

We departed the NCG incinerator at approximately 13:50 and returned to the environmental department offices. I turned off the PID at approximately 14:15.

6.8. Phone Conversation with Park Law

At approximately 14:20, I called Mr. Law from Mr. Wilkinson's office. Mr. Pernsteiner was also in the room. The purpose of the call was to ask Mr. Law a few follow-up questions

² I discovered post-inspection that this video was somehow corrupted, such that only the first 2 seconds play. Emissions from 2PO washer are still evident during this short clip.

³ The PID user's manual limits gas temperatures to 140° F (page 46 of 48).

regarding the NCG venting system. During the call, Mr. Law provided the detailed information regarding the NCG venting arrangement outlined earlier in Section 5.3 of this report.

6.9. Departure, Offsite Photos, and Evening Discussions

Following my conversation with Mr. Law, I departed the facility at approximately 14:30. I then traveled north across the Clearwater River and took photos of the facility from across the river and from the top of the Clarkston Grade hill to the north. These photos are #53-55 in Attachment 1.

At approximately 16:40 I spoke with Mr. Wilkinson via phone and learned that the fit testing for the Horizon Engineering personnel was taking longer than expected. Mr. Heffernan's plan was therefore to attempt flow measurements using the 2-inch ports on sampling points 1a, 1b, 2a, 2b tomorrow. Mr. Heffernan also plans to attempt to pull a Method 308 sample from either sampling point 3 or 4 tomorrow using a similar approach as was taken on point 1a today.

7. Inspection Activities – Thursday, December 5, 2013 – 08:10 to 13:20

I arrived at approximately 08:10 and was met at the security gate by Mr. Wilkinson, who escorted me to the environmental offices where we met briefly with Mr. Steele. Mr. Steele and Mr. Wilkinson expressed some concern over my photo and video documentation of the “steam” puffing from 2PO pulp washer. I explained that I considered the observed emissions a preliminary area of concern simply because I didn't know at that time whether the puffing constituted a compliance issue. This issue was discussed as part of the closing conference, and is described later in this report.

Following this discussion, Mr. Wilkinson and I proceeded to the M&D digester building where the following two testing feasibility activities were underway:

1. Flow measurement using 2-inch ports on sampling points 1a, 1b, 2a, and 2b.
2. Modified Method 308 sampling on sampling point 3a.

I arrived at the M&D digester building at approximately 09:00. The two test feasibility activities are discussed below.

7.1. Flow Measurement on Sampling Points 1a, 2a, 1b, and 2b

As described earlier and depicted in the photolog, sampling points 1a, 1b, 2a, and 2b each have two 2-inch diameter ports installed just upstream of the sampling point. The two, 2-inch ports are installed at 90° from each other, with one on the bottom of the line and the other on the side. EPA Reference Test Method 2 calls for two flow traverses at 90° angles in order to measure stack velocities across the stack cross section in two directions.

During this test feasibility effort, Horizon Engineering personnel were generally able to collect stable stack velocity data using the side port on each sampling point, traversing across

the stack cross section horizontally. However, when the valve on the bottom 2-inch port was opened at each location, a stream of brown liquid and solids poured out. This is depicted at sampling point 2b in photo 59. The presence of these materials within the line precluded collection of velocity traverse data using the bottom 2-inch port at each of these four sampling points. Because of this situation, Mr. Heffernan proposed conducting a double horizontal velocity traverse using just the side 2-inch port. I agreed that this approach made sense considering the circumstances.

Using this approach, Horizon personnel were able to collect flow rate data from the side 2-inch ports on sampling points 1a, 1b, 2a, and 2b. Collection of the flow rate data is shown in photos 65 – 68 and 72.

7.2. Method 308 Test Run on Sampling Point 3a

Testing feasibility efforts that morning also included attempts to collect a sample from sampling point 3a using the Method 308 sampling train that had successfully collected a sample from point 1a on the day prior. Unfortunately, repeated efforts to collect a sample were unsuccessful on point 3a, as described.

The initial attempt consisted of constructing the Method 308 sampling train identically to the configuration which had worked the day earlier on point 1a to the sampling port at 3a. This sampling effort on point 3a is shown in photos 56 and 57, which also depict the presence of brown liquid in the sampling line.

Horizon personnel operated the sampling equipment for about an hour (half a run) on point 3a before realizing something was wrong. Mr. Heffernan noticed that the large empty impingers had only collected about 250 milliliters (mL) of fluid at the one hour mark. Based on the experience with point 1a the prior day, collection of approximately 750-1,000 mL was expected. Closer inspection of the sampling train apparatus identified a leak that had developed in one of the fittings, causing the sampling train to collect ambient air. The run was therefore aborted and a re-start attempted.

After restarting the test run on port 3a, the sampling port clogged after about 15 minutes. Sampling was paused and the port was cleaned using a steel rod, only to plug again a few minutes later. It proved difficult to effectively clean the port using a steel rod.

When collecting wet/dry bulb temperatures earlier in the fieldwork, Horizon personnel had noticed that the ports on either side of the orifice plate just downstream of sampling port 3a had seemed to clog less easily than the sampling port itself. Based on this observation, sample collection was attempted from the port located just upstream of the 3a orifice plate which had been installed for the purpose of pressure testing. This attempt is shown in photo 61. Unfortunately, this port also plugged after approximately 10 minutes of sample collection.

The final sample collection attempt at point 3a involved using a custom ¼-inch diameter extension line fabricated onsite by Horizon personnel with assistance from Clearwater Paper

personnel. The extension is shown in photo 64. The idea was to insert the extension line into the process pipe to allow collection of a sample from the center of the pipe rather than the edge. The goal was also to curve the extension line such that the open end faced downstream in an attempt to minimize collection of solids and liquids. This idea was discussed pre-project, and is described earlier in section 4 of this report.

This approach was attempted on the port upstream of the 3a orifice plate. Although the port did not immediately plug, so much foaming brown liquid was collected that the empty impingers were quickly overwhelmed, overflowing, and clogged with foam. The foaming brown liquid is visible in photos 69-71.

Mr. Heffernan did recover the collected liquid in the mobile lab trailer, but no analysis is planned. I noticed that the brown liquid had a strong odor.

Following these attempts, at approximately 11:00, I discussed the efforts in the field with Mr. Heffernan. Mr. Heffernan explained the efforts and how all attempts to collect a sample had met with failure on point 3a. In addition to my observations described above, he explained that the excessive liquid, foam, and solids were such that the sample pump flow rate was continually dropping through the sampling effort and could not be maintained (the pump was overwhelmed). Based on these sampling attempt experiences, he expressed his opinion that sample collection on point 3a (and by extension, points 4a, 3b, and 4b) was not feasible. I expressed my agreement with his assessment.

7.3. Tour of M&D Digester Process Units

Near the end of the fieldwork, I was taken on a brief tour of the M&D process by Mr. Pernsteiner and Mr. Wilkinson. During this tour I observed the following portions of the process, which are shown in photos 74-84.

- M&D sawdust cyclones and pneumatic sawdust transport lines.
- Cyclone discharge into Kone bins.
- Digester 1 Bauer valve.
- Digester 1 Bauer valve discharge into M&D Digester 1.
- Pulp discharge from M&D Digester 2 into process line to Blow Tank.

7.4. Debrief with Horizon & Clearwater Technical Staff

A final debrief discussion was held in the conference room of the environmental department. Those in attendance were the same as attended the opening conference on 12/3/13. The following summarizes the discussions.

Regarding the attempts to collect a Method 308 sample at point 3a, Mr. Heffernan provided the following summary:

- The first attempt was aborted due to a leak in the valving.
- The second attempt was aborted due to plugging.
- The third attempt, using the 1/4-inch extension was aborted 10 minutes after starting because the testers couldn't maintain their sampling rate. A large volume of moisture

was collected. Mr. Heffernan expressed some uncertainty as to the exact reason the sampling rate could not be maintained.

With regard to flow rate data collected from sampling points 1a, 2a, 1b, and 2b, efforts were successful. Testers used a modified S-type pitot rather than a P-type. Mr. Heffernan explained that the P-type has small holes which would not be ideal for such a high moisture source.

Mr. Pernsteiner raised the issue of the temporary parametric monitoring and manual data collection that the facility has been conducting in response to EPA information request. Mr. Pernsteiner asked whether the facility could stop manual collection of data from the temporary monitoring devices. I responded that the facility could temporarily stop data collection until the test date is set for testing sampling points 1a, 2a, 1b, and 2b. Once the test date is set, Clearwater will need to resume data collection 30 days in advance of the test date, per the information request. Mr. Pernsteiner asked whether the facility could remove the temporary monitoring devices. I responded that the facility would need to make that request in writing, and specify which monitoring devices were temporary vs those which are permanently installed and monitored via the facility PI system.

The discussion ended with some brief discussion of logistics, schedule, and the preparation of a findings report by Horizon. The debrief ended at approximately 12:40.

7.5. Closing Conference

A closing conference was held to discuss the inspection and testing feasibility work in general, any action items for follow-up work, and EPA's preliminary findings regarding potential compliance issues. The following staff attended the closing conference:

- Don Holmes, Acting Mill Manager, Clearwater Paper
- Kerry Anderson, Pulp Mill Superintendant, Clearwater Paper
- Dave Wren, Power & Recovery Superintendant, Clearwater Paper
- Rick Wilkinson, Environmental Engineer, Clearwater Paper
- Bob Pernsteiner, Retiree, Clearwater Paper
- Zach Hedgpeth, Inspector, EPA Region 10

I began the closing conference by explaining that any preliminary items of concern noted by EPA during this conference do not necessarily constitute violations. A brief description of the Region 10 compliance and enforcement process was provided, informing Clearwater Paper personnel that the actual compliance determination is made by staff of the Office of Compliance and Enforcement at a later date.

Following these introductory remarks, I reviewed the three purposes of the inspection:

1. M&D digester testing feasibility work.
2. Inspection of pulp washers and newly installed doors.
3. Inspection and leak check of LVHC/NCG positive pressure piping.

I noted that I had received all records requested during the inspection with the exception of the most recent leak check report for the NCG system from August 2013, which Mr. Wilkinson had agreed to send via email⁴.

Lastly, I presented a single potential compliance issue identified by the EPA during the inspection. The issue relates to the fact that two of the pulp washers (2PO and 3PO) vent to atmosphere rather than being collected by the HVLC system.

The conference ended at approximately 13:20, and I departed the facility.

⁴ This report was received via email on 12/6/13, and is included as Attachment 13 to this report.